



Cyberinfrastructure Development and Implementation: Challenges and Solutions

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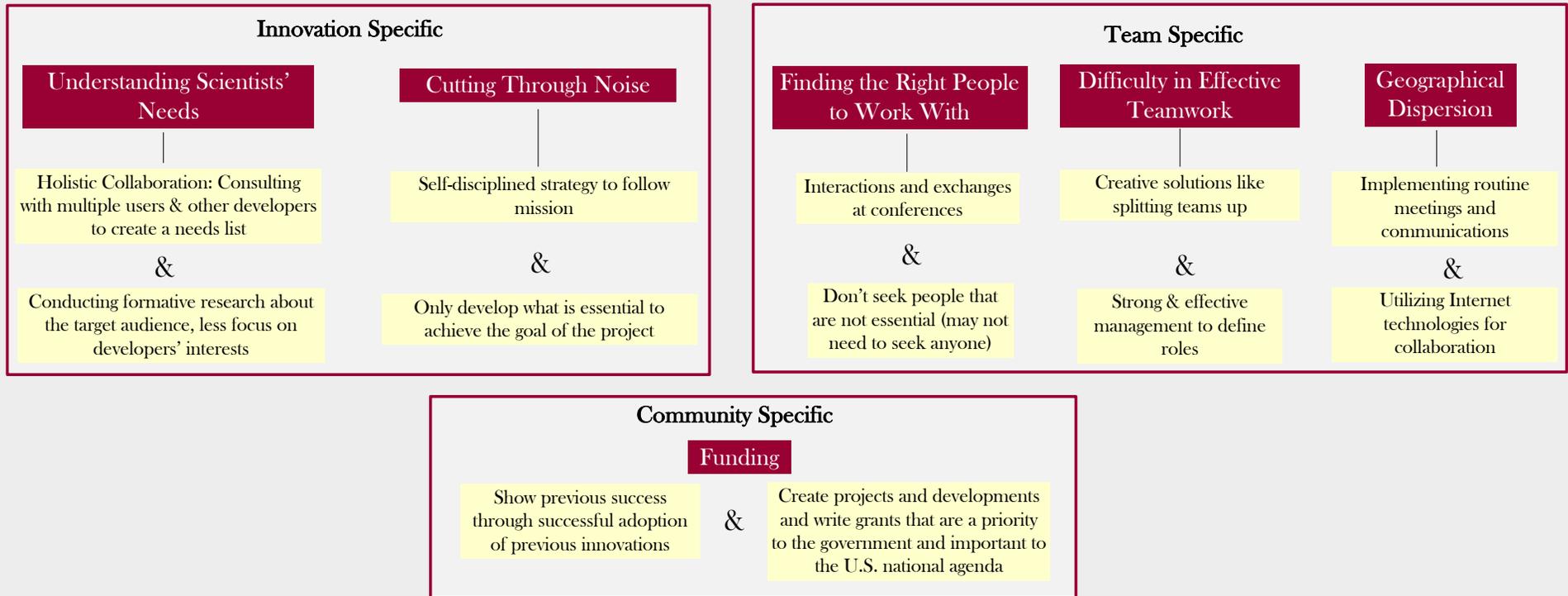
Introduction

The rapid growth of information and communication technologies have continued to improve, thereby improving the quality and ease of communication despite distance (Freeman, 2007). Still yet, there are many barriers to the diffusion of innovations process in the context of cyberinfrastructure (CI), defined as “infrastructure based upon distributed computer, information, and communication technology” (Freeman, 2007). This research addresses the challenges presented in the process of diffusion of these technologies by analyzing transcripts provided by the Organization, Communication, & Technology (OCT) Research group and coding for the unique challenges, and potential offered solutions found in this context. These challenges can impede on the development and implementation process, therefore there is a critical need to understand possible solutions (Rogers, 2003). Understanding these types of challenges can ease the process of development and implementation.

Methods

- Research Question: *What are the unique challenges and potential associated solutions during the development and implementation of cyberinfrastructure?*
- 38 qualitative interview transcripts were coded for challenges and possible solutions to the cyberinfrastructure dissemination and implementation (D&I) process.
- Interviews conducted by the OCT research team between Nov 2013- Nov 2014
- Grounded theory approach → selective coding → open coding → axial coding
- Identified examples for the categorizations

Results



Implications

- Diffusion of Innovations Theory lens
- Summarizes the challenges technologists face in the development and implementation of tools for cyberinfrastructure.
- Future technologists and scientists may utilize the outlined solutions to better inform future developments and strategies for implementation
- Future research should look at adoption challenges.

Limitations

- Researchers' limited knowledge of computer science and engineering
- Landscape of CI tool development may have changed since data collection

References

Freeman, P. A. (2007). Is "designing" cyberinfrastructure -or even, defining it- possible? *First Monday*, 12(6). Retrieved from <http://journals.uic.edu/ojs/index.php/fm/article/view/1900>

Rogers, E. (2003). *Diffusion of Innovations* (Fifth Edition). Free Press.